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EXAMINER

LEROUX, ETIENNE PIERRE

ART UNIT PAPER NUMBER

2161

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/898,894

Applicant(s)

WATANABE ET AL.

Examiner

Etienne P LeRoux

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### *Claims Status*

Claims 1-45 are pending. Claims 1-45 are rejected as detailed below.

### *Drawings*

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the Figure designation on page 4 of 6 is omitted. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 41-45 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No 5,440,726 issued to Fuchs et al (hereafter Fuchs).

Claims 41, 44 and 45:

Fuchs discloses:

a backup memory storing a plurality of file system transaction entries [Fig 1, 82]

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a first process that establishes a swarm of messages with respect to the file system transaction entries and delivers the swarm of messages to the file system [abstract]

a second process that performs a load phase in a concurrent manner for a plurality of messages in the swarm of messages [col 14, lines 11-32]

a third process that performs a modify phase for at least some messages in the swarm of messages, the modify phase operating on messages based on the order in which file system transaction entries were stored in the backup memory [col 11, lines 3-19]

Claim 42:

Fuchs discloses a fourth process that determines whether a file system transaction entry corresponds to a file system transaction that can be performed right away [col 10, lines 15-40]

Claim 43:

Fuchs discloses wherein the fourth process, in response to determining that the file system transaction cannot be performed right away, associates the file system transaction entry with a load retry state until a prior prerequisite transaction is performed [col 10, lines 15-40]

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 8-24 and 26-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs in view of US Pat No 6,671,820 issued to Kelman (hereafter Kelman).

Claims 1, 20, 26 and 31:

Fuchs discloses:

a log in the backup memory containing storage system transaction entries accumulated after a consistency point at which time results of the transaction entries are committed to the disk array [col 3, lines 28-33]

an initiator process that establishes a swarm of messages with respect to the transaction request entries and delivers the swarm to the file system [abstract],

an information retrieval process in the file system that is carried out on the swarm of messages in parallel [Fig 1, items 50, 52, 54 and col 5, lines 57-65]

Fuchs discloses the essential elements of the claimed invention as noted above but does not disclose a disk information retrieval process. Kelman discloses a disk information retrieval process [Fig 1, 24]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fuchs to include a disk information retrieval process as taught by Kelman for the purpose of providing a storage area network for centralized data sharing, data backup, and storage management in a computer networked environment [col 1, lines 15-20].

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The skilled artisan would have been motivated to modify Fuchs per the above for the purpose of providing a storage device which can be configured in the well-known RAID configuration [col 1, lines 45-50].

Claims 2:

The combination of Fuchs and Kelman discloses the elements of claim 1 as noted above and furthermore, Fuchs discloses wherein each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries in the log, respectively, and a state that indicates whether each of the messages is one of (a) newly transferred to the file system [col 3, lines 17-26].

Claims 3, 23, 29 and 34:

The combination of Fuchs and Kelman discloses the elements of claims 1 and 2 as noted above and furthermore, Fuchs discloses wherein the prerequisite event is completion of the load phase and a modify phase with respect to another of the messages [col 14, lines 11-32]

Claims 4, 24, 30 and 35:

The combination of Fuchs and Kelman discloses the elements of claims 1-3 as noted above and furthermore, Fuchs discloses wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the load phase after the prerequisite event occurs respectively [col 16, lines 39-53]

Claim 8:

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The combination of Fuchs and Kelman discloses the elements of claim 1 as noted above and furthermore, Fuchs discloses wherein the backup memory comprises a non-volatile random access memory (NVRAM) [col 3, line 5].

Claim 9:

The combination of Fuchs and Kelman discloses the elements of claim 1 as noted above and furthermore, Fuchs discloses wherein the storage system comprises a network storage appliance [title]

Claims 10, 36 and 37:

Fuchs discloses:

accumulating in a log in the backup memory, storage system transaction request entries after a consistency point at which time results of the transaction request entries are committed to the disk array [col 3, lines 28-33]

establishing a swarm of messages with respect to the transaction request entries and delivering the swarm to the file system [abstract] and

performing an information retrieval process of the file system on the swarm of messages in parallel [Fig 1, items 50, 52 54 and col 5, lines 57-65].

Fuchs discloses the essential elements of the claimed invention as noted above but does not disclose a disk information retrieval process. Kelman discloses a disk information retrieval process [Fig 1, 24]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fuchs to include a disk information retrieval process as taught by Kelman for the purpose of providing a storage area network for centralized data sharing, data backup, and storage management in a computer networked environment [col 1, lines 15-20].

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The skilled artisan would have been motivated to modify Fuchs per the above for the purpose of providing a storage device which can be configured in the well-known RAID configuration [col 1, lines 45-50].

Claim 11:

The combination of Fuchs and Kelman discloses the elements of claim 10 as noted above and furthermore, Fuchs discloses wherein each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries in the log, respectively, and a state that indicates whether each of the messages is one of (a) newly transferred to the file system [col 3, lines 17-26].

Claim 12:

The combination of Fuchs and Kelman discloses the elements of claims 10 and 11 as noted above and furthermore, Fuchs discloses wherein the prerequisite event is completion of the load phase and a modify phase with respect to another of the messages [col 14, lines 11-32]

Claim 13:

The combination of Fuchs and Kelman discloses the elements of claims 10-12 as noted above and furthermore, Fuchs discloses wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the load phase after the prerequisite event occurs respectively [col 16, lines 39-53]

Claim 14:



The combination of Fuchs and Kelman discloses the elements of claim 10 as noted above and furthermore, Fuchs discloses wherein the storage system comprises a network storage appliance [Fig 1, item 12 and col 5, lines 57-65]

Claim 15:

Fuchs discloses:

accumulating in a log in the backup memory, storage system transaction request entries after a consistency point at which results of the transaction request entries are committed to the disk array [col 3, lines 28-33]

establishing a swarm of messages with respect to the transaction request entries and delivering the swarm to the file system [abstract] and

performing a information retrieval process of the file system on the swarm of messages in parallel [Fig 1, items 50, 52 and 54, and col 5, lines 47-65].

Fuchs discloses the essential elements of the claimed invention as noted above but does not disclose a disk information retrieval process. Kelman discloses a disk information retrieval process [Fig 1, 24]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fuchs to include a disk information retrieval process as taught by Kelman for the purpose of providing a storage area network for centralized data sharing, data backup, and storage management in a computer networked environment [col 1, lines 15-20].

The skilled artisan would have been motivated to modify Fuchs per the above for the purpose of providing a storage device which can be configured in the well-known RAID configuration [col 1, lines 45-50].

Claim 16:

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The combination of Fuchs and Kelman discloses the elements of claim 15 as noted above and furthermore, Fuchs discloses establishing for each of the messages of the swarm, a transaction block including a pointer to one of the transaction request entries in the log, respectively, in the log and a state that indicates whether each of the messages is one of :

(a) newly transferred to the file system [col 3, lines 17-26],

Claim 17:

The combination of Fuchs and Kelman discloses the elements of claims 15 and 16 as noted above and furthermore, Fuchs discloses wherein the prerequisite event is completion of the load phase and a modify phase with respect to another of the messages [col 14, lines 11-32]

Claim 18:

The combination of Fuchs and Kelman discloses the elements of claims 15-17 as noted above and furthermore, Fuchs discloses wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the load phase after the prerequisite event occurs respectively [col 16, lines 39-53]

Claim 19:

The combination of Fuchs and Kelman discloses the elements of claim 15 as noted above and furthermore, Fuchs discloses wherein the storage system comprises a network storage appliance [Fig 1, item 12 and col 5, lines 57-65].

Claims 21, 27 and 32:

The combination of Fuchs and Kelman discloses the elements of claim 20 as noted above and furthermore, Fuchs discloses each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries [col 3, lines 17-26].

Claims 22, 28 and 33:

The combination of Fuchs and Kelman discloses the elements of claim 20 as noted above and furthermore, Fuchs discloses a state that indicates whether each of the messages is one of (a) newly transferred to the file system [col 3, lines 17-26].

Claim 23:

The combination of Fuchs and Kelman discloses the elements of claims 20 and 22 as noted above and furthermore, Fuchs discloses wherein the prerequisite event is completion of the load phase and a modify phase with respect to another of the messages [col 14, lines 11-32].

Claim 24:

The combination of Fuchs and Kelman discloses the elements of claims 20-23 as noted above and furthermore, Fuchs discloses wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the load phase after the prerequisite event occurs respectively [col 16, lines 39-53]

Claim 27:

The combination of Fuchs and Kelman discloses the elements of claim 26 as noted above and furthermore, Fuchs discloses each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries [col 3, lines 17-26].

Claim 28:

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The combination of Fuchs and Kelman discloses the elements of claim 20 as noted above and furthermore, Fuchs discloses a state that indicates whether each of the messages is one of (a) newly transferred to the file system [col 3, lines 17-26].

Claim 29:

The combination of Fuchs and Kelman discloses the elements of claims 20 and 28 as noted above and furthermore, Fuchs discloses wherein the prerequisite event is completion of the load phase and a modify phase with respect to another of the messages [col 14, lines 11-32]

Claim 30:

The combination of Fuchs and Kelman discloses the elements of claims 20, 28 and 29 as noted above and furthermore, Fuchs discloses wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the load phase after the prerequisite event occurs respectively [col 16, lines 39-53]

Claim 32:

The combination of Fuchs and Kelman discloses the elements of claim 31 as noted above and furthermore, Fuchs discloses each of the messages of the swarm is identified by a transaction block including a pointer to one of the transaction request entries [col 3, lines 17-26].

Claim 33:

The combination of Fuchs and Kelman discloses the elements of claims 31 and 32 as noted above and furthermore, Fuchs discloses a state that indicates whether each of the messages is one of (a) newly transferred to the file system [col 3, lines 17-26].

Claim 34:

The combination of Fuchs and Kelman discloses the elements of claims 31 and 32 as noted above and furthermore, Fuchs discloses wherein the prerequisite event is completion of the load phase and a modify phase with respect to another of the messages [col 14, lines 11-32]

Claim 35:

The combination of Fuchs and Kelman discloses the elements of claims 31-34 as noted above and furthermore, Fuchs discloses wherein the initiator process is adapted to retransfer each of the messages incapable of being subject to a load phase until the prerequisite event occurs to the file system for completion of the load phase after the prerequisite event occurs respectively [col 16, lines 39-53]

Claim 38:

The combination of Fuchs and Kelman discloses the elements of claim 1 as noted above and furthermore, Fuchs discloses a third process that modifies at least some messages in the swarm of messages based on the order in which storage system transactions entries were stored in the log [col 11, lines 3-19].

Claim 39:

The combination of Fuchs and Kelman discloses the elements of claim 10 as noted above and furthermore, Fuchs discloses a third process that modifies at least some messages in the swarm of messages based on the order in which storage system transactions entries were accumulated in the log [col 11, lines 3-19].

Claim 40:

The combination of Fuchs and Kelman discloses the elements of claim 26 as noted above and furthermore, Fuchs discloses a third process that modifies at least some messages in the

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swarm of messages based on the order in which storage system transactions entries were accumulated in the log [col 11, lines 3-19].

3. Claims 5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs in view of Pub No 2003/0131190 issued to Park et al (hereafter Park).

Claim 5:

Fuchs discloses the elements of claims 1- 4 as noted above but does not disclose wherein the initiator is adapted to establish a skip state with respect to a skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm. Park discloses wherein the initiator is adapted to establish a skip state with respect to a skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm [paragraph 9]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fuchs to include wherein the initiator is adapted to establish a skip state with respect to a skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm as taught by Park. The ordinarily skilled artisan would have been motivated to modify Fuchs per the above for the purpose of purpose of skipping defective sectors [paragraph 9].

Claim 25:

Fuchs discloses the elements of claim 20 as noted above but does not disclose wherein the initiator is adapted to establish a skip state with respect to a skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the

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skipped messages from the swarm. Park discloses wherein the initiator is adapted to establish a skip state with respect to a skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm [paragraph 9]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fuchs to include wherein the initiator is adapted to establish a skip state with respect to a skipped messages for which a portion of the disk array associated therewith is unavailable, the skip state thereby omitting the skipped messages from the swarm as taught by Park. The ordinarily skilled artisan would have been motivated to modify Fuchs per the above for the purpose of purpose of skipping defective sectors [paragraph 9].

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs in view of US Pat No 6,330,570 issued to Crighton (hereafter Crighton).

Claim 6:

Fuchs discloses the elements of claim 4 as noted above but fails to disclose wherein the file system includes a panic state adapted to alert an operator if a message received from the initiator in the swarm is a message incapable of being subject to a load phase until a prerequisite event occurs. Crighton discloses a failure in reading a file or writing the file to the backup apparatus triggers a warning message [col 2, lines 34-36]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Fuchs and Crighton to obtain wherein the file system includes a panic state adapted to alert an operator if a message received from the initiator in the swarm is a message incapable of being subject to a load phase until a prerequisite event occurs. The ordinarily skilled artisan would have been

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motivated to modify the combination of Fuchs and Crighton as per the above for the purpose of alerting an operator if a backup has not been successfully completed [col 2, lines 26-30].

Claim 7:

Fuchs discloses the elements of claim 4 as noted above but fails to disclose wherein the file system includes a panic state adapted to alert an operator if a message is retransferred by the initiator process is a message incapable of being subject to a load phase until a prerequisite event occurs. Crighton discloses a failure in reading a file or writing the file to the backup apparatus triggers a warning message [col 2, lines 34-36]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Fuchs '726 and Crighton '726 to include wherein the file system includes a panic state adapted to alert an operator if a message is retransferred by the initiator process is a message incapable of being subject to a load phase until a prerequisite event occurs. The ordinarily skilled artisan would have been motivated to modify the combination of Fuchs and Crighton as per the above for the purpose of alerting an operator if a backup has not been successfully completed [col 2, lines 26-30].

***Response to Arguments***

Applicant's arguments filed 4/1/2005 have been fully considered and found to be partially persuasive.

**Applicant Argues:**

Applicant states in the third paragraph on page 16:

Fuchs fails to disclose a system having an attached disk array, as recited in the Applicant's claim 1. More specifically, the only memory elements disclosed in Fuchs are the processing nodes'



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volatile and nonvolatile memory areas, neither of which is an attached disk array as explicitly claimed. In fact, the words "disk" and "array" do not appear at all in the Fuchs reference."

**Examiner Responds:**

Examiner is persuaded. A new art rejection over Fuchs in view of Kelman is provided.

**Applicant Argues:**

Applicant states in the third paragraph on page 17:

Here, it is further noted that Fuch's checkpoint is not analogous to the Applicants' claimed consistency point. Namely, the checkpoint in Fuch's specifies a time at which an application process's critical data is copied into the process's associated non-volatile memory (see col.3, lines 2-5), whereas the Applicant's consistency point is a time at which results of storage system transactions entries are committed to a disk array.

**Examiner Responds:**

Examiner is not persuaded. Fuchs discloses a non-volatile memory as noted above but does not disclose a disk array. Examiner maintains a disk array is a well-known instance of non-volatile memory and thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the disclosure of Fuchs to include a disk array. Examiner provides in above office action, a disclosure by Kelman of a disk array which is used as non-volatile memory in an application similar to the present invention.

**Applicant Argues:**

Applicant states in the third paragraph on page 18:

Neither of these message-passing references described in Fuch's abstract teaches or suggests grouping multiple messages into a swarm (or any other unit, for that matter), nor do they teach or suggest delivering a swarm of messages to a file system. In fact, Fuchs expressly teaches that his message logging, replaying and reordering operations are performed one message at a time, and not processed in groups (or swarms) of messages.

**Examiner Responds:**

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Examiner is not persuaded. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., not processed in groups of messages) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, MPEP § 2106 states that during patent examination the pending claims must be interpreted as broadly as their terms reasonable allow. The reason is simply that during patent prosecution, when claims when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. An essential purpose of patent examination is to fashion claims that are precise, clear, correct and unambiguous.

Applicant has made no attempt to amend the claims to produce a clear and concise description of the invention. In particular, the claim language "a swarm of messages" is ambiguous for the reasons given below.

The language "swarm of messages" is not well-known and accepted in the art. The Microsoft Computer Dictionary has no entry for "swarm of messages." The only alternative is to consider a common dictionary definition for swarm, which is "a large number of bees, led by a queen, leaving one hive for another to start a new colony."<sup>1</sup> This common dictionary definition of "swarm" clearly is not relevant to the present invention.

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<sup>1</sup> Webster's New World College Dictionary, Fourth Edition

The same above referenced section in the MPEP requires that claims be given their broadest reasonable interpretation in light of the supporting disclosure. The specification states in the paragraph joining pages 13 and 14:

In this example, a swarm of 200 messages 401, corresponding to 200 transition blocks 504 are grouped. This number is variable, and can be chosen based upon a variety of factors including optimum processing time for a given group size, overall NVRAM log size, and the like.

Based on the above, examiner concludes that a swarm of messages comprises a group of messages of variable quantity. The following disclosure by Fuchs, i.e., column 10 line 50 through column 11, line 2, reads on above interpretation of the claim language “a swarm of messages”

As shown in FIG. 3, in order to reconstruct the state of processes involved in a recovery up to the recovery line 310, the fault tolerant computing system 5 can restart the processes from the restart line 302, which is the latest actual checkpoint for each process before the recovery line 310, by restoring the critical memory copy 88 associated with each checkpoint. The recovery line 310, preferably calculated by the central recovery coordinator 75 as discussed above, will be positioned at the latest available globally consistent set of logical or actual checkpoints.

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Messages that were processed before the restart line 302, such as message M.sub.1, are referred to as obsolete messages and are not useful for recovery. Messages that were received and processed between the restart line 302 and the recovery line 310, such as messages M.sub.2 and M.sub.3, must have both their message contents and processing order logged in the receiver log file 90. These messages are referred to as deterministic messages, and they must be replayed in their original order for deterministic reconstruction, after restart in order to reach the recovery line 310.

The above messages transmitted between the restarting line and the recovery line reads on the claim 1 limitation a “swarm of messages.”

#### **Applicant Argues:**

Applicant states in the second paragraph on page 19 “For this reason, Fuchs cannot anticipate or render obvious the applicants’ recited disk information-retrieval process in the file system that is carried out on the swarm of messages in parallel.”

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**Examiner Responds:**

Examiner is not persuaded. Fuchs discloses the following in column 22, lines 50-60:

Once the central recovery coordinator 75 has recomputed the recovery line, it will broadcast the recomputed recovery line information to each monitored application process. Upon receipt of the recomputed recovery line, each monitored process will process the recovery line, substantially in parallel, and determine the appropriate response, as shown by the processing branches 1230 and 1240 in FIG. 12, for the processes P.sub.0 and P.sub.N, respectively.

Examiner maintains above disclosure by Fuchs reads on the claim limitation “that is carried out on the swarm of messages in parallel.”

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etienne P LeRoux whose telephone number is (571) 272-4022. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Etienne LeRoux

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*Etienne LeRoux*